

PATENT COOPERATION TREATY

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NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

| | |
|---|---|
| Date of mailing (day/month/year) 18 May 1999 (18.05.99) | |
| International application No. PCT/US98/18531 | Applicant's or agent's file reference 18557A-2PC |
| International filing date (day/month/year) 03 September 1998 (03.09.98) | Priority date (day/month/year) 04 September 1997 (04.09.97) |
| Applicant SPUDICH, James, A. et al | |

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
30 March 1999 (30.03.99)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

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Authorized officer

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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | |
|--|--|---|
| Applicant's or agent's file reference 18557A-2-1PC | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/US98/18531 | International filing date (day/month/year) 03 SEPTEMBER 1998 | Priority date (day/month/year) 04 SEPTEMBER 1997 |
| International Patent Classification (IPC) or national classification and IPC Please See Supplemental Sheet. | | |
| Applicant STANFORD UNIVERSITY | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets.
- ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

| | |
|--|--|
| Date of submission of the demand 30 MARCH 1999 | Date of completion of this report 14 OCTOBER 1999 |
| Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230 | Authorized officer S. DEVI Telephone No. (703) 308-0196 JOYCE BRIDGERS PARALEGAL SPECIALIST CHEMICAL MATRIX |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US98/18531

I. Basis of the report

1. This report has been drawn on the basis of *(Substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments):*

☒ the international application as originally filed.

☒ the description, pages (See Attached) , as originally filed.

pages _____ , filed with the demand.

pages _____ , filed with the letter of _____.

pages _____ , filed with the letter of _____.

☒ the claims, Nos. (See Attached) , as originally filed.

Nos. _____ , as amended under Article 19.

Nos. _____ , filed with the demand.

Nos. _____ , filed with the letter of _____.

Nos. _____ , filed with the letter of _____.

☒ the drawings, sheets/~~fig~~ (See Attached) , as originally filed.

sheets/~~fig~~ _____ , filed with the demand.

sheets/~~fig~~ _____ , filed with the letter of _____.

sheets/~~fig~~ _____ , filed with the letter of _____.

2. The amendments have resulted in the cancellation of:

☒ the description, pages None .

☒ the claims, Nos. None .

☒ the drawings, sheets/~~fig~~ None .

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the ~~Supplemental Box~~ Additional observations below (Rule 70.2(c)).

4. Additional observations, if necessary:

NONE

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III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The question whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been and will not be examined in respect of:

☐ the entire international application.

☒ claims Nos. 14-55

because:

☐ the said international application, or the said claim Nos. _ relate to the following subject matter which does not require international preliminary examination (*specify*).

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. _ are so unclear that no meaningful opinion could be formed (*specify*).

☐ the claims, or said claims Nos. _ are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 14-55.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. STATEMENT**

| | | |
|-------------------------------|--------------------|-----|
| Novelty (N) | Claims <u>1-13</u> | YES |
| | Claims <u>None</u> | NO |
| Inventive Step (IS) | Claims <u>None</u> | YES |
| | Claims <u>1-13</u> | NO |
| Industrial Applicability (IA) | Claims <u>1-13</u> | YES |
| | Claims <u>None</u> | NO |

2. CITATIONS AND EXPLANATIONS

Claims 1-13 lack an inventive step under PCT Article 33(3) as being obvious over Geke et al. and Hirabayashi et al. in view of Spudich et al. (1996).

Geke et al. teach a layered silicate (mica) surface and adsorption of polymers on this surface and their use in ion-exchange (abstract). Geke et al. do not teach the attachment of arginine tagged protein to such a surface.

Hirabayashi et al. teach attaching a biological protein moiety to an arginine tag at the C-terminus and adsorbing such a tagged protein on a surface or to a substance (abstract and Figure 1). The tag may have 1 to 3 arginine residues. The protein may be recombinantly expressed as a fusion protein with the arginine tag. The use of tagged proteins in column chromatography and the elution of bound molecules using a sodium salt solution are taught (page 182).

Spudich et al. (1996) teach attaching a myosin fragment tagged to an arginine residue and its adsorption to a flat glass substrate (abstract).

The invention lacks the inventive step because a layered silicate or mica surface comprising an arginine-tagged protein is suggested by the combined teachings of Geke et al. who disclose a layered silicate (mica) surface and Hirabayashi et al. who teach arginine tagged proteins and attaching such tags to a substance or surface. One of ordinary skill in the art would have found it obvious to have attached Hirabayashi's arginine tagged protein or Spudich's arginine tagged myosin on Geke's layered silicated surface for the purpose of functionalizing the layered silicated surface for protein immobilization.

----- NEW CITATIONS -----
NONE

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Sheet 10

Continuation of: Boxes I - VIII

CLASSIFICATION:

The International Patent Classification (IPC) and/or the National classification are as listed below:
IPC(6): G01N 33/543, 33/552, 33/549; C12P 21/06, 21/04 and US Cl.: 436/518, 527, 532; 435/69.1, 69.7

I. BASIS OF REPORT:

This report has been drawn on the basis of the description,
pages, 1-41 and sequence listing page 1., as originally filed.
pages, NONE, filed with the demand.
and additional amendments:
NONE

This report has been drawn on the basis of the claims,
numbers, 1-55 , as originally filed.
numbers, NONE, as amended under Article 19.
numbers, NONE, filed with the demand.
and additional amendments:
NONE

This report has been drawn on the basis of the drawings,
sheets, 1-4, as originally filed.
sheets, NONE, filed with the demand.
and additional amendments:
NONE